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Duke Energy Carolinas, LLC's 2021 Avoided Cost
Proceeding Pursuant to S.C. Code Ann. Section 58-
41-20(A)

JUNE 10, 2021

Introduction and Qualifications

Q. Please state your name, your position and your business address.

A. My name is John C. Ahlrichs. I am employed by Northbrook Energy, LLC, an affiliate of Northbrook Carolina Hydro, LLC (“Northbrook”), as President, and I act as asset manager for Northbrook’s South Carolina hydroelectric facilities. My business address is at the company’s office at 14550 N Frank Lloyd Wright Blvd, Suite 210, Scottsdale, AZ 85260. I can be reached by email at cahlrichs@nbenergy.com or by telephone at (480) 551-1771.

Q. Have you previously provided testimony to the South Carolina Public Service Commission?

A. No, I have not.

Q. Briefly describe your professional background and your responsibilities, including at Northbrook.

A. I am a licensed Professional Engineer. The vast majority of my professional career has been in power generation. Since at least 1989, my work has been focused on the management and operation of hydroelectric dams and plants. The hydro facilities I have been responsible for span all regions of the United States. I have been the asset manager for Northbrook’s South Carolina hydro facilities since 1997.

Q. On whose behalf are you providing testimony today?

A. I am providing this testimony on behalf of Northbrook. As asset manager, I am authorized and competent to give this testimony on behalf of Northbrook.

Q. What is the purpose of your testimony in this Proceeding?

1 **A.** The purpose of my testimony is to address the issues raised in Dockets 2021-89-E and
2 2021-90-E under South Carolina Energy Freedom Act, codified at S.C. Code Ann. § 58-
3 41-10 *et seq.* (the “Act”) as they relate South Carolina owners and operators of small, non-
4 utility, hydroelectric generation facilities like those of Northbrook. I will provide
5 comments regarding the attributes of hydropower and whether avoided cost rates as
6 currently proposed by Duke Energy Carolinas, LLC (“DEC”) and/or Duke Energy
7 Progress, LLC (“DEP”) fully account for the costs and differences of operating hydro
8 facilities versus other generation types. Overall, the current proposed avoided costs rates
9 of DEC and DEP are not appropriate for small hydro qualifying facilities (“QFs”) like those
10 of Northbrook. The Commission should approve rates and terms that properly account for
11 the full costs of operating small hydro facilities.

12 **Q.** **Are you familiar with witness Matthew Stanley of Pelzer and Aquenergy?**

13 **A.** Yes, I am. Having read his testimony, I believe all of the information Mr. Stanley provides,
14 including as it relates to hydropower, its benefits, the proper calculation of avoided costs,
15 and the consequences of failing to do so are all correct. For the sake of convenience and
16 efficiency, I and Northbrook adopt his testimony and will further refer to it here as well.

17 **Q.** **Please describe the small hydro industry in South Carolina?**

18 **A.** As Mr. Stanley testified, in South Carolina, there are less than three dozen 1MW or greater
19 conventional hydro plants. Most are owned by large utilities while only about 10 are owned
20 by independent power producers (“IPPs”) like Northbrook.

1 Though a smaller resource, hydropower overall has remained a steady source of reliable
2 power serving the grid in South Carolina. Its reliability makes it a base capacity resource
3 that serves a critical role in providing power to support a clean energy transition.

4 **Q. Please describe the Northbrook hydro facilities.**

5 Northbrook owns and operates three facilities in South Carolina — one in Greenville, one
6 in Ware Shoals and one in Honea Path. All of Northbrook’s facilities are QFs under
7 PURPA and small power producers under the Act.

8 **Q. Are the Northbrook hydro facilities currently able to operate at a break-even point
9 or profitably?**

10 Assuming historical precipitation amounts and continuing accumulation of capital repair
11 costs, profitable or break-even operation is impossible under current avoided cost rates,
12 which are materially similar to those being proposed in the current proceedings. Rather
13 than improving rates, the rates currently proposed by DEC would be a continuation of the
14 same harmful and inadequate rates demanded of hydro since at least this year.

15 **Q. Before 2021, were small hydro plants, like those of Northbrook, able to operate at
16 least on a break-even basis? How?**

17 **A.** In general, yes. Previously, DEC applied an increased performance adjustment factor
18 (“PAF”) of 2.0 in their avoided cost calculations for hydroelectric QFs. This meant that
19 whatever the avoided costs rate was, hydro producers could expect the rate to be multiplied
20 by a factor of 2.0. Though an imperfect solution to properly compensating hydro QFs, it
21 did provide an overall recovery which historically allowed for small hydro facilities to at
22 least break-even so long as prudently managed. Ending the 2.0 PAF specific to hydro

1 sometime in 2021 without warning or other process, coupled with avoided cost rates
2 trending lower, has been financially devastating to small hydro QFs like those owned by
3 Northbrook. The rates being proposed in this proceeding by DEC show that it intends for
4 this downward trend for avoided costs rates to continue.

5 **Q. Please comment on the calculation of the avoided cost when it comes to hydro**
6 **facilities.**

7 **A.** Consistent with Mr. Stanley's explanation, it is also my understanding and testimony that
8 the calculation of utility avoided cost rates includes more than just the cost of the
9 production related capacity and energy cost. It is important that the full range of avoided
10 costs like these and other related system benefits be properly reflected in the calculation of
11 the avoided cost for hydro QFs.

12 **Q. What are some of the other system benefits that should be considered?**

13 **A.** Hydropower, unlike other intermittent resources, is seasonally predictable and highly
14 reliable. Small hydroelectric assets provide the most reliable services of any resource type
15 in the system and do so in a non-emitting manner. More so than other renewable energy
16 options, hydropower provides predictable real-time, day-ahead and oftentimes week-ahead
17 energy and resource adequacy.

18 Small hydro also provides the DEC system resiliency, as it does not have the risk of fuel
19 supply disruptions common to fossil fuel generators as frequently seen in the Northeast and
20 most recently in Texas. Capacity calculations do not readily capture the flexibility and fuel
21 security of small hydro. The PAF attributed to all QFs by DEC does not capture the unique
22 value of these small hydro assets.

1 Hydro assets are also a resilient strategic asset in terms of cybersecurity risk. Hydro plants
2 require limited electronics and can even be run manually. They can also provide renewable
3 black-start capabilities to improve grid resilience. This distinguishes hydro as a resource,
4 especially from other renewables.

5 **Q. Are there environmental benefits of hydro facilities that should be included in the**
6 **calculation of avoided cost?**

7 **A.** Yes. In addition to those already mentioned, hydro operation helps avoid fossil fuel
8 generation, which reduces carbon emission and other combustion byproducts. Hydropower
9 also reduces the impact, costs, and risk of other externalities related to rail and pipeline
10 transportation of fossil fuels, and the environmental damage and risks related to waste
11 disposal. The Commission should continue to recognize all these environmental benefits
12 and the avoided costs and risks associated with clean, renewable, dependable hydro power.

13 **Q. How does the operation of hydro facilities impact and benefit communities?**

14 **A.** All independently owned small hydro facilities employ local workers in their
15 communities. Small hydro plants have long histories employing local community
16 members. In some cases, generations of families have learned the small hydro trade and
17 continue to be employed at the hydro facilities. Most of the major maintenance and capital
18 expenditure programs are completed using local labor, fabricators, suppliers, mechanical
19 companies and electrical companies. These are real investments and jobs that stay in
20 communities. In fact, former Duke hydro employees continue to provide valuable services
21 to Northbrook's hydro facilities.

1 In addition to economic benefits of employment, hydro plants typically also provide
2 recreational access points, as well as flood control benefits for the citizens of South
3 Carolina. That is certainly true of Northbrook's facilities. These benefits to the public
4 are uncompensated, but all have a cost to owners and operators like Northbrook.

5 **Q. Do you have any recommendations for the Commission?**

6 **A.** Northbrook is asking that the full and unique value of hydro resources be properly
7 considered in determining an appropriate avoided cost for hydro QFs. These include items
8 such as benefits and avoided costs related to environmental attributes, system reliability
9 and reduced losses, and fuel related cost savings, among others. A longstanding, reliable,
10 renewable energy resource like hydropower should be able to operate without sustaining
11 substantial losses. An interim option for achieving those objectives would be to reinstate
12 DEC's use of a higher PAF multiplier for hydro, and then more fully revisiting the
13 calculation of avoided cost in a subsequent avoided cost proceeding. Even if somewhat
14 imperfect, that option would at least preserve status quo and prevent hydro facilities from
15 closing—because that is literally what is at issue for small hydro facilities. That result is
16 bad for South Carolina and inconsistent with the Act's provisions to take into consideration
17 the differences of generation resources when approving appropriate avoided cost
18 methodologies.

19 **Q. Are you saying that the hydro operators should be guaranteed the recovery of their**
20 **annual capacity costs?**

21 **A.** No, but prudently operated hydro projects should not be expected to operate at substantial
22 loss and should have the opportunity to be compensated for the capacity and other benefits

1 they provide. The alternative is that small hydro becomes permanently unsustainable and
2 will be lost. Importantly, the fact that small, independent hydro facilities are operating at
3 a loss strongly suggests that the utilities themselves do not operate their own hydro
4 facilities within current avoided costs. Accordingly, a closer look at those specific utility
5 operations would likely show that the proposed avoided cost rates result in hydro QFs being
6 treated less favorably than utility owned hydro.

7 **Q. Do you recommend different rates for specific renewable technologies?**

8 **A.** Potentially, yes. It is my understanding that the Commission can allow for differences
9 among generation types in approving avoided cost methodologies. While my testimony has
10 focused on hydro operations, generation characteristics for other technologies vary
11 significantly from hydro generation. Thus, the development of rates which allow for the
12 full recovery of the capacity costs may differ for other technologies. In fact, DEC has
13 historically acknowledged as much by applying a higher PAF for hydro rates.

14 **Q. In addition to rates, are there any other matters before the Commission in this**
15 **proceeding that could assist hydro operators?**

16 **A.** Yes – PPA duration. Longer PPA duration of several years at appropriate avoided cost rates
17 is necessary to assure resource adequacy and maintenance. Hydropower facilities are
18 capital intensive assets that require ongoing civil (i.e., dam), mechanical, and electrical
19 improvements. It is difficult to finance turbine overhauls and critical dam safety
20 improvements when the resource adequacy compensation does not provide reasonable
21 incentives on an annual, biennial, or even triennial basis. Unexpected repairs are not
22 planned, resulting in material economic barriers when capacity pricing does not incentivize

1 near term repairs and or replacements, which potentially creates a less reliable grid asset.
2 Longer PPA duration consistent with the Act's requirements would be a meaningful step
3 forward.

4 **Q. Do you anticipate the situation improving for small hydro producers without**
5 **assistance from the Commission?**

6 **A.** No. Under existing avoided cost rates and methodology, small independent hydro assets
7 will not survive. Moreover, the technical demands of utilities have only increased, causing
8 the cost of hydro operations to increase without corresponding returns. For example, the
9 rapid build out of solar facilities in DEC's territory has resulted in small hydro owners
10 trying to keep up with ever-changing pricing schedules. Operating hydroelectric facilities
11 to keep up with more complex pricing schemes has resulted in more costly staffing and
12 automation requirements. The unpredictable daily pricing schedule from DEC has also
13 affected future revenue uncertainty, adversely impacting the present value of the
14 hydroelectric facilities and the ability to plan for future operations.

15 **Q. Will you update your testimony based on information that becomes available?**

16 **A.** Yes. Northbrook reserves the right to revise and add to their testimony via supplemental or
17 amended testimony, especially if new information becomes available or known.

18 **Q. Does this conclude your testimony?**

19 **A.** Yes, with a brief closing comment. To reiterate Mr. Stanley's closing testimony, the issue
20 here is nothing less than the viability of small hydro in South Carolina. Currently
21 Northbrook's South Carolina facilities are now for the first time in decades operating at
22 considerable losses. The sole reason for that is the continuing trend by DEC to reduce

1 avoided cost rates and to improperly treat all resources as being equal. As the Act
2 contemplates, all resources should be treated fairly but not the same. The current economic
3 situation cannot be sustained and the different costs and attributes of hydro must be more
4 fully recognized. While there may not be an opportunity to undertake that searching
5 analysis in this proceeding, some return to pre-2021 PAF adjustments would be a
6 temporary reprieve that allows for a full study in the near future.

7 Ultimately, not acknowledging the full benefits of hydro capacity will result in these
8 longstanding renewable assets being scrapped and lost forever. That is a needless loss and
9 inconsistent with this state's public policy and the Act.

10 Thank you for the opportunity to provide my sworn testimony in this important matter.